

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) FINGER SUPPORT FOR INJECTION AMPOULES

(71) We, CHEMIE GRUNENTHAL GMBH, a body corporate organised under the laws of Germany, of 5190 Stolberg/Rheinland, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to a finger support for injection ampoules.

Injection ampoules are being increasingly used for the injection of medicaments. In principle, these injection ampoules generally consist of a glass body acting as container for the medicament, which is closed at one end by a piston-like plug and which carries, or is designed to be connected to, an injection needle. To facilitate holding of the glass body, the ampoule is provided at its rear end with a projection made, for instance, from plastics material or metal, which may be, for example, oval in outline, which acts as a finger support during injection. In one known device, a rotationally symmetrical ampoule body made of glass tubing is provided at its rear end with a retaining lip onto which is snapped a handle, produced separately from a plastics material, which acts as a finger support. During assembly of this known instrument, the plastics handle has to be pressed onto the glass body over the retaining lip thereof, as a result of which the glass body and also the plastics component are frequently damaged. If attempts are made to overcome this drawback by using a softer plastics material for the handle or by increasing the size of the recess in the handle into which the retaining lip snaps, the handle often becomes detached from the glass body. In another known device, the plastics finger support is in two parts. One of these parts completely accommodates the lip arranged at the end of the rotationally

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symmetrical ampoule body and possesses a collar-like projection, over which the second part of the finger support tightly engages. This second part is in the form of a cap with a central aperture to allow a piston rod to pass therethrough into the ampoule body. Although this known embodiment avoids the main disadvantages of the other known embodiment discussed above, it has its own particular disadvantage that, during withdrawal of the piston (which is necessary, for example, during the suction of liquids into the ampoule or during the aspiration step that is essential before injection), the finger support readily separates into its constituent parts and, as a result, becomes unusable. In addition, this known finger support is also unsuitable for preventing accidental removal of the piston-like plug.

The present invention relates to a finger support for injection ampoules which does not have any of the disadvantages attending conventional designs.

The present invention provides a finger support for injection ampoules having a rotationally symmetrical glass ampoule body with a retaining lip, which support comprises an annular finger rest adapted to fit over the retaining lip and having a continuous groove encircling its bore, and an annular holding member having a corresponding tongue on its outer surface adapted to fit into the groove of the finger rest thereby to effectively attach the holding member to the glass ampoule body. By "annular holding member" is meant either a continuous ring or a snap ring which has a gap therein.

The finger support according to the invention is described in detail below with reference to the accompanying drawing in which:

Fig. 1 is a cross-section through the rear end of an injection ampoule fitted with the finger support according to the invention;

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Fig. 2 is a plan view of the finger support;  
Fig. 3 is a plan view of one embodiment of  
the annular holding member;

Fig. 4 and 5 are, respectively, a cross-  
section and a plan view of another em-  
bodiment of the annular holding member;  
and

Fig. 6 is a plan view of yet another em-  
bodiment of the annular holding member.

Referring now to Fig. 1 of the drawing,  
the reference (1) denotes a rotationally  
symmetrical ampoule body of glass which  
has a retaining lip (2) as known *per se*. The  
reference (3) denotes an annular finger rest,  
preferably made of a plastics material,  
which has a groove (4) extending round its  
bore in that part projecting beyond the glass  
body (1). An annular holding member (5),  
which can consist for example of a plastics  
material, has a tongue (6) arranged on its  
outer edge, the tongue (6) being inserted  
into the groove (4) of the finger rest (3).

The annular holding member (5) is  
preferably designed in such a way that the  
face thereof which is not in contact with the  
ampoule body and the corresponding face of  
the finger rest (3), lie in one plane as  
shown in Figure 1.

Fig. 2 is a plan view of the finger rest (3).  
Pimples (7) which are shown more clearly in  
Figure 2 than in Figure 1 are arranged  
around the inner circumference of the  
finger rest (3) and serve, by virtue of their  
compressability to compensate any minor  
variations in the external diameter of glass  
bodies (1) produced by different  
manufacturers. In addition, they prevent the  
assembled finger support from readily  
rotating relative to the glass body (1). If  
however, the glass body (1) and the finger  
rest (3) are manufactured with adequate  
precision so that the outer surface of the  
glass body is closely contiguous with the  
inner surface of the finger rest, it is possible  
to dispense altogether with the pimples (7).

The annular holding member (5) whose  
tongue (6) can be inserted into the groove  
(4) of the finger rest (3) can be in the form of  
a snap ring (5a) or in the form of a con-  
tinuous ring (5b).

Fig. 3 is a plan view of the snap ring (5a).  
On either side of a gap (8), the snap ring (5a)  
has either bores or projections (9), to make  
it easier to bring the ends of the snap ring  
(5a) together during assembly of the finger  
support. In the case of bores, the ends of an  
assembly tool, for example, tweezers, can be  
inserted into them, while in the case of  
projections, these will extend substantially  
perpendicular to the plane of the snap ring  
and on that side of the ring which does not  
come into contact with the ampoule body.  
These projections are used not only to make  
assembly easier, but also as an aid in seeing  
whether the ring (5a) is in the correct

position during preparation for assembly.

Figs. 4 and 5 show the annular holding  
member (5) in the form of a continuous ring  
(5b) respectively in cross section and in plan  
view. It is even clear from the cross-section  
shown in Fig. 4 than from Fig. 1 that, to  
accommodate the retaining lip (2) of the  
glass body (1), the annular holding member  
(5), especially when it is in the form of a  
continuous ring (5b), preferably has a  
corresponding conical depression.

The internal diameter of the annular  
holding member (5) is preferably smaller  
than the internal diameter of the glass body  
(1) of the injection ampoule, so that the  
holding member (5) performs the additional  
function of preventing accidental with-  
drawal of the piston-like closure plug for the  
glass body (1), not shown.

In order more effectively to prevent the  
closure plug from being pulled out, the inner  
opening of the holding member (5), as  
shown in Fig. 6, can be provided with an  
encircling tongue (10) which acts like a stop  
surface for the backwardly sliding closure  
plug.

Accordingly, the finger support according  
to the invention represents a securely in-  
terconnected combination of the finger rest  
(3) with the holding member (5) which  
surrounds the retaining lip (2) of the glass  
body (1). For assembly purposes, the finger  
rest (3) is pushed from the end distal of the  
lip (2) over the glass body (1) of the in-  
jection ampoule until it rests on the  
retaining lip (2), after which it is fixed in this  
position by the annular holding member (5)  
whose tongue (6) is inserted into the groove  
(4). By virtue of this arrangement and  
method of assembly, the glass body (1) is not  
subject to any mechanical stressing, thus  
ruling out the danger of breakage during  
assembly of the finger support. Independent  
or unintentional separation of the parts (3)  
and (5) from one another (as a result of  
which the finger support would become  
unusable), either during storage of the  
injection ampoule or, for example, during  
withdrawal of the closure plug, is safely  
prevented with this arrangement.

The finger rest (3) and the holding  
member (5) of the finger support according  
to the invention can be made from the same  
material or from different materials, more  
particularly from such plastics as  
polyethylene, or polystyrene. It is of course  
also possible, however, to use other  
materials, for example, aluminium for the  
finger rest (3) or, for example, sprung steel  
for the snap ring (5a). The continuous ring  
(5b) is preferably made from a slightly more  
rigid material than the finger rest (3),  
making assembly easier.

WHAT WE CLAIM IS:—

1. A finger support for injection ampoules

- having a rotationally symmetrical glass ampoule body with a retaining lip, which support comprises an annular finger rest adapted to fit over the retaining lip and having a continuous groove encircling its bore, and an annular holding member (as herein defined) having a corresponding tongue on its outer surface adapted to fit into the groove of the finger rest thereby to effectively attach the holding member to the glass ampoule body.
2. A finger support as claimed in Claim 1, wherein the internal diameter of the annular holding member is smaller than the internal diameter of the ampoule body.
3. A finger support as claimed in Claim 1 or 2, wherein the annular holding member is recessed so as to accommodate the retaining lip of the ampoule body.
4. A finger support as claimed in any of Claims 1 to 3, wherein the annular holding member has an inwardly projecting tongue encircling its bore.
5. A finger support as claimed in any of Claims 1 to 4, wherein the annular holding member is a continuous ring.
6. A finger support as claimed in any of Claims 1 to 4, wherein the annular holding member is a snap ring.
7. A finger support as claimed in Claim 6, wherein the snap ring has a bore or projection extending perpendicular to the plane of the ring and situated at each end of the ring.
8. A finger support as claimed in any of Claims 1 to 7, wherein a radially inwardly-projecting pimples are arranged around the inner circumference of the finger rest.
9. A finger support as claimed in Claim 1 substantially as hereinbefore described with reference to the accompanying drawing.

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Fig. 1.

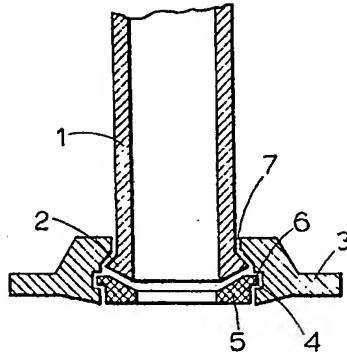


Fig. 2.

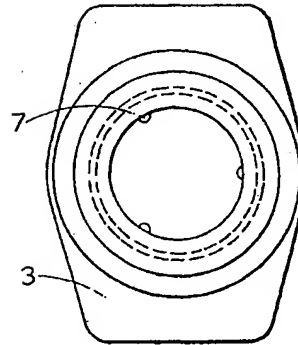


Fig. 3.

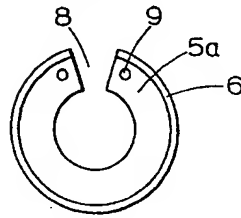


Fig. 4.

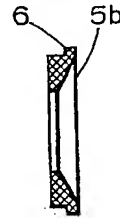


Fig. 5.

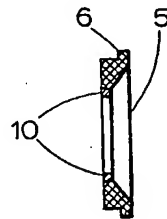
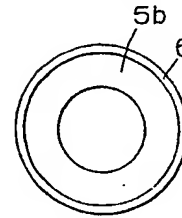


Fig. 6.